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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,300	10/31/2003	Marvin L. Vestal	SY9-195	2702
959	7590	12/20/2004	EXAMINER	
LAHIVE & COCKFIELD, LLP. 28 STATE STREET BOSTON, MA 02109			FERNANDEZ, KALIMAH	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/700,300

Applicant(s)

VESTAL ET AL.

Examiner

Kalimah Fernandez

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 32-42 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-18, 20-30, 43-54, 58-63 and 65 is/are rejected.
- 7) ☒ Claim(s) 6, 19, 31, 55-57 and 64 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5-26-04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim, which depends from a dependent claim, should not be separated by any claim, which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

2. Claim 18 is objected to because of the following informalities because it depends on claim 27, which is not a preceding claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

And

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1-5,16-18,29-30,43-45,48,50,58-59 and 65 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No 6,444,980 issued Kawato et al.
3. As per claims 1 and 59, Kawato et al disclose an MADLI ion source (see col.1, lines 5-10; lines 45-55).
4. Kawato et al disclose a sample holder having a sample surface (2)(col.2, lines 58-62).
5. Kawato et al disclose an optical system configured to irradiate a sample surface with a pulse of energy (col.2, lines 46-62).
6. Kawato et al disclose the pulse of energy strikes a sample surface at an angle within 10 degrees of the normal of the sample surface (see fig. 8; col.5, lines 14-24).

7. Kawato et al disclose a first ion optics system configured to extract sample ions in a first direction substantially normal to the sample surface (col.4, lines 26-40).

8. As per claim 2, Kawato et al disclose the optical system is configured to irradiate a sample on the sample surface with a pulse of energy at an angle within 1 degree of the normal of the sample surface (see fig. 8; col.5, lines 14-24).

9. As per claim 3, Kawato et al disclose the pulse of energy is substantially coaxial with the first direction (see fig. 8).

10. As per claim 4, Kawato et al disclose a first electrode disposed between the sample holder and a second electrode, wherein both electrodes have apertures (see col.5, lines 14-24). Kawato et al disclose electrostatic lens comprises of several electrodes having apertures.

11. Kawato et al disclose a first ion optical axis defined by the line between the center of the aperture in the first electrode and the center of the aperture in the second electrode, the first ion optical axis intersecting the sample surface at an angle within 5 degrees of the normal of the sample surface (see fig. 8).

12. As per claim 5, Kawato et al disclose the first optical axis intersects the sample surface at an angle within 1 degree of the normal of the sample surface (see fig. 8).

13. As per claims 16 and 65, Kawato et al disclose an ion optics system configured to extract the sample ions independent of sample mass. Kawato et al teach the extraction in a field-free cavity (see col.8, lines 11-14).

14. As per claims 17 and 44, Kawato et al disclose the extraction direction substantially coaxial to the irradiation angle (see for example fig. 8).

15. In regards claim 18, this rejection assumes applicant intended to basis the claim's dependency on claim 17, not claim 27 as recited. Kawato et al disclose a first ion optical axis defined by the line between the center of the aperture in the first electrode and the center of the aperture in the second electrode, the first ion optical axis intersecting the sample surface at an angle within 1 degree of the normal of the sample surface (see fig. 8). Likewise, claims 45,48, and 50 are rejected (see also col.8, lines 1-9). In col. 8, lines 8-9, Kawato et al teach a third optional electrostatic lens (13), which has multiple of electrodes and is configured to focus sample ions---deflect ions into the mass analyzer.

16. As per claim 29, Kawato et al also disclose an optical system configured to irradiate a sample on the sample surface with a pulse of energy having a Poynting vector, the optical system configured such that the Poynting vector is substantially coaxial with the extraction direction (see fig. 8). Poynting vector are common to all lasers.

17. As per claim 30, Kawato et al disclose the Poynting vector intersects the sample surface at an angle in the range between about 5 degrees and 50 degrees with respect to the normal of the sample surface (col.3, lines 30-48).

18. As per claim 43, Kawato et al disclose a mass analyzer having a sample holder (2) and an optical system configured to irradiate a sample on the sample surface with a pulse of energy such that the pulse of energy strikes a sample on the sample surface at an angle within 10 degrees or less of the normal of the sample (for example col.5, lines 14-25).

19. Kawato et al disclose a first ion optics system (10) disposed between the sample holder and the mass analyzer, the first ion optics system configured to extract ions along a first ion optical axis (see fig. 11a).

20. Kawato et al disclose a second ion optics system (13) configured to deflect ions from the first ion optical axis and onto a second ion optical axis

(col.8, lines 1-9). Here, the phrases “configured to” does not require deflection rather the ion optics system merely situated to deflect ions, because the recitation that an element is “configured to” perform a function is not a positive limitation.

21. As per claim 58, Kawato et al teach a time-of-flight mass spectrometer (col.2, lines 1-3).

22. Claims 7-15, 20-28, 43,46-49,51-54 and 60-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawato et al ('980) as applied to claims 1 and 16 above, and further in view of US Pat No 5,898,173 issued to Franzen.

23. Kawato et al teach the claimed invention except for an ion deflector.

24. However, Franzen teaches the desirability of an ion deflector (col.3, lines 10-16; col.2, lines 23-27).

25. It would have been obvious to an ordinary artisan at the time of the invention to combine Kawato et al and Franzen, because Franzen teaches increased resolution and sensitivity (col. 2, lines 23-27).

26. Additionally, it is obvious to added more ion optics systems—ion deflector, because it has been held that mere duplication of the essential



working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 70.

27. As per claim 43, Kawato et al disclose a mass analyzer having a sample holder (2) and an optical system configured to irradiate a sample on the sample surface with a pulse of energy such that the pulse of energy strikes a sample on the sample surface at an angle within 10 degrees or less of the normal of the sample (for example col.5, lines 14-25).

28. Kawato et al disclose a first ion optics system (10) disposed between the sample holder and the mass analyzer, the first ion optics system configured to extract ions along a first ion optical axis (see fig. 11a).

29. Kawato et al disclose a second ion optics system (13) configured to deflect ions from the first ion optical axis and onto a second ion optical axis (col.8, lines 1-9). Here, the phrases "configured to" does not require deflection rather that the ion optics system situated to deflect ions.

30. Nevertheless, Franzen teaches the desirability of an ion deflector (col.3, lines 10-16; col.2, lines 23-27).

31. It would have been obvious to an ordinary artisan at the time of the invention to combine Kawato et al and Franzen, because Franzen teaches increased resolution and sensitivity (col. 2, lines 23-27).

32. Additionally, it is obvious to added more ion optics systems—ion deflector, because it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 70.

### ***Allowable Subject Matter***

33. Claims 32-42 are allowed. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach or fairly suggest a “ heater system connected to the first ion optics system; and a temperature-controlled surface disposed substantially around the first ion optics system” in combination with the other limitations of claim 32.

34. Claims 6,19,31,55-57, and 64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. See above statement of reasons for indication of allowable subject matter.

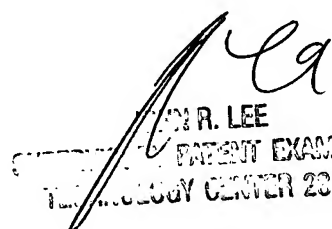
### ***Conclusion***

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Pat No 6,707,040 issued to Makarov

et al is considered relevant. Makarov et al disclose a mass analyzer having a sample holder (101) and an optical system configured to irradiate a sample on the sample surface with a pulse of energy at an irradiation angle (see for example col.4, lines 40-52; col.8, lines 40-44).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalimah Fernandez whose telephone number is 571-272-2470. The examiner can normally be reached on Mon-Tues 6:30-3:30; Wed-Thurs 8-5 and Fri.9am-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

  
JOHN R. LEE  
PATENT EXAMINER  
TECHNOLOGY CENTER 2000

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KF